

# Massage Therapy for ADHD: A Systematic Review of Its Impact on Pediatric Treatment

Niki Munk, PhD

A recent systematic review focusing on the use of massage therapy for the treatment of attention deficit/hyperactivity disorder (ADHD) in children and young people examined the question: What is the impact of massage therapy on ADHD treatment for children and adolescents? This systematic review and meta-analysis is important because it does not include language criteria (which expands the number of studies included); it provides an updated overview of the evidence with reflection on the evidence strength; it demonstrates excellent reporting and information synthesis; and it highlights the need for more research in this area.

## ADHD: A Brief Overview

ADHD is a neurodevelopmental disorder with three types of presentation: predominately inattentive, predominately hyperactive-impulsive, or a combination presentation in which both types are equally present.<sup>1</sup> ADHD is not exclusively a childhood disorder, although most of the ADHD-related attention does tend to be on young people. While often beginning in a person's early age, the condition and impactful symptomology can span an individual's life course.<sup>2</sup> ADHD-focused consideration and research tends to focus on children and adolescents; however, the continuation or exacerbation of symptoms carried over into adulthood accompany an increased risk for other comorbid conditions, including anxiety, substance dependency/abuse, bipolar disorder, and high under-attainment rates for education and occupational security.<sup>3</sup> Due to the magnified negative outcomes of ineffectively treated

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or managed ADHD symptomology for emerging or established adults, the impact of ADHD treatment in youth should be considered across the life-course trajectory.

The cause of ADHD is not currently known; however, research suggests that a combination of and/or interaction between genetic, environmental, and non-genetic factors may be influential, including substance use during pregnancy, environmental toxin exposure, brain injuries, and low birth weights.<sup>4</sup> Over 6 million (9.4 percent) young people from age 2–17 have had a diagnosis for ADHD within their lifetimes in the United States.<sup>5</sup> Treatment approaches for ADHD include pharmacological interventions (e.g., stimulants or antidepressants) in addition to behavioral therapy and social skills training.<sup>6</sup> Integrative approaches, such as diet modification, exercise, or therapeutic massage, seek to provide assistance with troublesome ADHD symptomology without pharmacological burden.

### **Systematic Review and Meta-Analysis: The Process and What's Involved**

A systematic review is a summation and reflection on the available research that meets a specific inclusion criteria. Systematic reviews are conducted in an effort to synthesize what is known about a specified topic and consider the findings of similar studies on said topic in relation to each other. Systematic reviews also allow for the consideration of research merit and quality in relation to outcomes for a given cohort of research studies addressing a particular research question.

The systematic approach and analysis methodology that examines the combined and similar data extracted from published studies included in a systematic review is called a meta-analysis. Meta-analysis in combination with a systematic review constitutes the highest tier on the evidence hierarchy pyramid.

Systematic review procedures include multiple time-consuming steps to identify, screen, and select

articles for inclusion. Once articles are identified, relevant data is extracted from each of the included studies and organized in a meaningful way for synthesis, discussion, and analysis (if applicable). The extracted data are often the table components in the article, reporting the findings from the systematic review.

The initial search in a systematic review casts a broad net in an effort to identify as many relevant articles as possible. Research librarians are excellent resources and partners for systematic reviews, due to their familiarity with literature identification, search databases, and various research support software.

The key words chosen for use in the search are important and allow for more targeted searches. For example, in this column's highlighted study, including "child" and "adolescent" in the search criteria filtered out studies in other aged populations. Searches can also narrow the "net" for precision by including "not" statements. For example, the term "massage" is used in a lot of contexts and for procedures that fall out of the scope of typical massage therapists (for example, cardiac massage). When a search is returning a lot of similar unrelated articles, "not" statements can be effectively used to narrow down the field before human resources are spent filtering them out.

After the initial article identification search, researchers for the systematic review examine each title and abstract to exclude those studies clearly not meeting the criteria. The last pre-inclusion set of articles are considered in full, read, and reviewed by researchers and compared against the inclusion criteria for final determinations. Those articles that remain are included in the review, and then progress to the data extraction step of the process.

In many cases, hand searches seek out any missed and final articles identified through works cited in other articles, other similar reviews, or non-indexed journal searches. The PRISMA statement<sup>7</sup> encompasses the reporting guidelines for systematic reviews. PRISMA is open access for those interesting in learning more about, and improving their consumption of, systematic review processes and content (see [www.equator-network.org](http://www.equator-network.org)).

A meta-analysis is the statistical analysis of combined data from multiple studies. Not all systematic reviews include meta-analysis, but all meta-analysis require a systematic review to ensure all potential articles are identified for the analysis. There is a set process for meta-analyses, and training is needed to conduct such a study and often requires the know-how and use of statistical analysis software. Meta-analysis requires specific data-analysis information from the original studies, including, for example, the sample size, means and standard deviations, specific test scores, and confidence intervals. In addition, studies included in a meta-analysis must also share the same outcomes and, ideally, similar data collection time points. Unfortunately, the design and reporting consistency of massage research do not tend to align with meta-analysis needs—particularly those from efforts prior to the early-mid 2000s (the point at which reporting guidelines within the medical research community were becoming more available, circulated, and adopted<sup>8</sup>). Regardless, because meta-analysis pools the outcomes and effects of multiple studies addressing the same questions, results are more comprehensive and higher on the “strength” scale of evidence.

### **Systematic Review and Meta-Analysis of Massage Therapy for Pediatric ADHD Treatment**

The article “Massage Therapy For the Treatment of Attention Deficit/Hyperactivity Disorder (ADHD) in Children and Adolescents: A Systematic Review and Meta-Analysis”<sup>9</sup> examined the question: What is

the impact of massage therapy on ADHD treatment for children and adolescents? Unlike many earlier systematic reviews focused on massage therapy, author Shu-Cheng Chen and associates included eligible articles published in any language so long as they were identified in major English or Chinese search engines. Historically, many systematic reviews excluded articles not published in English, so this review contains a broader breadth of knowledge synthesis on its topic area. The authors also point out that prior to their work, no systematic review existed that specifically focused on massage for young people with ADHD, although a review of pediatric massage from 2007<sup>10</sup> did identify two random control trials on the topic.

The systematic review's inclusion criteria required that studies were trials (rigorously reported case series were also included) examining massage for those 18 years or younger with ADHD diagnosis using validated outcome measures assessing improvements in ADHD core symptomology, including impulsivity, inattention, and hyperactivity. The search on several English and Chinese databases identified 348 unique articles with the key search terms—a majority of which (93 percent) were excluded based on their titles and abstracts because they did not meet the criteria. Of the remaining 23 articles that received a full-text review, two independent reviewers ultimately extracted data from 11 studies—eight of which were included in meta-analysis.

Included studies fell into two categories: those in which interventions were standardized (n=5) and those in which interventions were individualized (n=6). Included studies could be further categorized by those coming from a Western approach (n=3) and those administered from a traditional Chinese medicine (TCM) approach (n=8). The three studies encompassing a Western approach to massage therapy came from the United States (n=2) and Canada (n=1). It is interesting to note that while Sweden is considered a Western country, one of the TCM studies originated in Sweden and was published in

Chinese. Treatment applications ranged from one per day to two per week, and most sessions were 20–30 minutes long. Treatments applied from the TCM discipline described particular acupoints used during their treatment (listed in the review’s intervention details table), but only two of the three Western-disciplined treatments outlined the body regions addressed.

The acupoints and regions most commonly identified for treatment among the TCM derived studies included Xinshu (BL 15), Ganshu (BL 18), Baihui (GV 20), Kangong, Shenshu (BL 23), Sishencong (EX-HN 1), Pishu (BL 20), Zusanli (ST 36), Abdomen, Tianmen (BL 2), Taiyang (EX-HN 5), and Quchi (LI 11). The oldest of the included studies (published in 1998) was from the Western massage approach and included a standardized protocol for smooth strokes using moderate pressure along the children’s neck, shoulders, and back.<sup>11</sup> The other two Western-derived studies were the next oldest and were published in 2003; one used Swedish, manual lymph drainage, and craniosacral approaches in an individualized protocol,<sup>12</sup> while the other used stroking, rocking, and stretching to address the children’s head, neck, arms, torso, back, and legs.<sup>13</sup>

The systematic review points to each of the included studies indicating some, if not all, positive outcomes for their participants, but the overall quality of the evidence was graded low due to several limiting factors, including those related to study design, participants being very different from each other, small sample sizes, and the overall low number of studies on the topic. In some cases, study authors did not report enough information, did not conduct appropriate statistical analysis, and/or did not respond when contacted to provide additional, not-included pertinent data from the original article.

The older, Western-disciplined studies used the Conners’ Teacher and Patient Rating Scales in addition

to other measures, such as a Happy Face Scale, a fidget score, or observed time on tasks. Outcomes for these studies included better anxious-passive and asocial scores compared to waitlist control and improved teacher-observed time on tasks compared to relaxation therapy. All of the TCM-disciplined studies in the review used the effective rate, proportion of participants with improvement after treatment, as one of or the primary outcome measure. Due to differences in measures and comparison groups, meta-analysis was only conducted on four of the TCM-based trials, each of which compared the effective rate for ADHD symptoms for those treated with massage versus Ritalin. The meta-analysis results indicated that the effective rate for those receiving massage was better ( $p=0.0004$ ) compared to those taking Ritalin. The systematic review also noted that one of the studies included in the meta-analysis found TCM massage improved hyperactivity and scores on an ADHD-specific scale (both  $p<0.00001$ ) over Ritalin.<sup>14</sup>

It is important to note that the systematic review did not actively compare the Western-originated and TCM-originated studies, although much of my summary makes those distinctions. I part and parceled out the highlighted comparisons because I believe it improves the systematic review's usefulness from a clinical standpoint.

### **Clinical Relevance and Other Important Takeaways**

To the massage clinician, it makes sense that massage therapy can positively affect children and adolescents with ADHD. While the supportive evidence from this systematic review was graded somewhat low overall, this is more of an indication that research in the topical area is still early and that a need exists for better designed, larger research studies. As I have pointed out in various columns, the building of a research evidence base takes time. The oldest study in this review was from 1998, which indicates the topic has only even been on the research "radar" for approximately 20 years. Twenty years

isn't terribly long, relatively speaking, considering the massage therapy research funding support context during this time; what used to be only relatively small foundation support has expanded to larger federal mechanisms with the growth of complementary, alternative, and/or integrative medicine.

It is also notable that the last Western-originating study was published over 15 years ago on this topic. This is unfortunate considering the vast improvements to research design and reporting for the massage field, the steady increase in diagnosis and understanding of ADHD in children and youth, and the strengthening research literacy in the massage field. Given that a large proportion of massage clinicians practice from a Western approach, updated research in this area would be welcomed and is warranted. In the meantime, all massage clinicians can look to the studies included in this systematic review for potential starting points in their practice when working with children and adolescents with ADHD. If you don't already incorporate Eastern approaches, perhaps familiarizing yourself with the acupoints most included in the TCM-related studies would be a beneficial addition to your technique tools for working with those with ADHD. From a clinical standpoint, the overarching message from this review is that the relatively small amount of evidence on massage for ADHD does point to massage therapy being beneficial for children and adolescents with ADHD.

A final item massage clinicians might consider is the reminder that ADHD symptomology and impact is not exclusive to children and adolescents. While, to my knowledge, no massage-related research has focused specifically on adults with ADHD, the potentially effective treatment principles highlighted in this review would likely translate to adults. I have known many people who were diagnosed with ADHD as adults. These same adults have anecdotally told me the diagnosis explained their behavior and challenges in youth and that massage has always been beneficial for them to ground down and focus. Surely there is grounds here for a case report or series coming from massage clinicians within this



readership. While single case reports were excluded from this systematic review, rigorous case series were included. Perhaps work inspired by this column will be included in an updated systematic review and meta-analysis in the future.

## Notes

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*Niki Munk, PhD, LMT, is an associate professor of health sciences at Indiana University, a Kentucky-licensed massage therapist, a visiting fellow with the Australian Research Centre in Complementary and Integrative Medicine, and a mother of two young daughter-scientists. Munk's research explores real-world massage therapy for chronic pain, trigger point self-care, massage for amputation-related sequelae, and the reporting and impact of massage-related case reports. Contact her at nmunk@iu.edu.*